

In re Patent Application of:
KAMENOFF
Serial No. 10/694,635
Filing Date: October 27, 2003

REMARKS

Claims 1-23 have been cancelled. New Claims 24-30 have been added. No claims have been amended.

Applicant thanks the Examiner for the detailed study of the application and prior art. Applicant has cancelled existing claims and submits new claims 24-30 that more clearly set forth the novel and unobvious features of the self-heating battery as claimed. Applicant also submits the Declaration of Robert Kamenoff Under 37 C.F.R. 1.132, which sets forth the special requirements for a survival radio and how the claimed battery was developed to solve problems associated with the radio design and its requirements.

As explained in the 132 Declaration, the claimed self-heating battery overcomes various problems associated with raising the temperature of a battery sufficiently so that the battery delivers a substantial majority of its rated capacity. A discharge current circuit locks out the heating element when the battery is not in use to prevent the heating element from discharging the battery when stored at cold temperatures and turns off the heating element when the discharge current is high to allow the entire available energy

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from the battery to be delivered to a load during periods of peak demand.

FIG. 4 shows details of that portion of the circuit. Claim 24 as presented in this Amendment also recites the charge protection circuit such as shown in FIGS. 5 and 6. This circuit is operative with the battery and comprises an operational amplifier having an output and a transistor connected to the output of the operational amplifier and operative for sensing current through the transistor by measuring its voltage drop such that when a battery is in a quiescent state the operational amplifier senses no voltage across the transistor and biases the transistor off. When a charge potential is applied to the battery, the transistor is off, ensuring that no charge current can flow. When the charge is applied, a discharge current flows such that the operational amplifier senses the forward voltage drop and when the drop exceeds a predetermined amount, the operational amplifier turns the transistor on, clamping its forward voltage drop a predetermined amount such that the charge protection has minimal effect on the battery terminal voltage.

The Examiner has rejected claims as obvious over U.S. Patent No. 5,834,131 to Lutz in view of U.S. Patent No. 5,773,955 to Hall, and further in view of U.S. Patent No.

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5,710,507 to Rosenbluth, and further in view of U.S. Patent Publication No. 2001/0004198 to Matsuyama. Other claims were rejected as obvious over these references and other references including U.S. Patent No. 5,939,865 to McGrath and U.S. Patent No. 5,853,908 to Okutoh.

At the outset, Applicant notes that the primary reference Lutz does not disclose or suggest any type of charge protection circuit. As to the battery heating circuit in Lutz, it operates in a substantially different way to achieve a different result. The claimed invention presented in this Amendment is not a combination of familiar elements such as shown in Lutz and the other patents to operate with known methods. The claimed invention has a substantially different result that is not predictable by any combination of these cited references.

Indeed, the claimed self-heating battery does not use a self-heating mode as in Lutz. The claimed circuit as presented in this Amendment disables self-heating during peak high power demands, thereby making total battery power available to the load during this time. FIG. 3 in Lutz shows that the current sensing circuit senses heating current and the load current and this could cause the heater in Lutz to remain on even after the external load is removed. The

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claimed invention, on the other hand, and as explained in the Kamenoff Declaration, uses an automatic heat adjustment to optimize the battery for required specifications. Lutz must use an initializing mode while the claimed invention does not.

Thus, Lutz teaches away from the claimed invention and requires the initializing stage.

Rosenbluth discloses a temperature transducer used for sensing temperature of a reserve battery, but it has a much different operation and allows a reserve battery to become operative at predetermined times. Thus, the combination of Lutz and Rosenbluth suggests a self-warming battery that requires an initialization mode just to make a reserve battery become operative.

McGrath shows a rechargeable battery for an overcharge protection circuit while Okutoh discloses an extra cell, but nowhere teaches or suggests the claimed invention. Matsuyama shows a charge/discharge circuit 7, which uses a controller as an integrated circuit 10 in combination with a number of transistors to supply electric energy from a solar panel to a connector and supply electric energy from the battery that is necessary for operation. The charge/discharge circuit is operative when too much power is charged from the solar panel and allows any necessary discharge. It may show

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some type of discharge circuit, but nowhere does it suggest or motivate one to lock out the heating element when the battery is not in use to prevent the heating element from discharging the battery when stored at cold temperatures and turning off the heating element when the discharge current is high to allow the entire available energy from the battery to be delivered to the load during periods of peak demand. Hall is directed to a battery charger that supplies charging current for high voltage in which control is responsive to the angle of line voltage such that any deviation between actual and desired current is corrected by modification of the transistor switching signals. Again, the combination of Hall and the prior art would not suggest or motivate one skilled in the art to solve the problems as accomplished by the claimed invention.

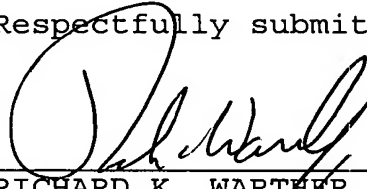
The Declaration of Robert Kamenoff gives in great detail the problems addressed by the claimed invention and how prior art batteries could not meet the expectations of military and other customers.

Applicant contends that the present case is in condition for allowance and respectfully requests that the Examiner issue a Notice of Allowance and Issue Fee Due.

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If the Examiner has any questions or suggestions for placing this case in condition for allowance, the undersigned attorney would appreciate a telephone call.

Respectfully submitted,



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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: **MAIL STOP AMENDMENT, COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450**, on this 8th day of June, 2007.

